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MINISTRY OF WATER AND IRRIGATION

Water Resource Policy Support

FINAL REPORT:

SUPPORT TO LIMS AT THE WAJ CENTRAL LAB

by

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July, 2001

The Water Resource Policy Support activity is supported by
the United States Agency for International Development (USAID) through a
contract with Associates in Rural Development Inc. (ARD):
USAID/ARD Contract No. LAG-I-00-99-00018-00, Delivery Order No. 800

Mission Background:

Both MWI and USAID have confirmed their intention that the MWI/ARD Water Resource Policy Support activity (WRPS) should assist with sustaining the laboratory information management system (LIMS) purchased by WAJ with the support of – but after the completion of – the WQIC project. The effective operation of the MWI water quality laboratories is essential for good management of policy implementation. The WRPS contract generally anticipates support for LIMS during the first year of operation.

It is felt that LIMS has not yet been fully established and is not yet sustainable within the MWI. The objectives of further support would be to ensure that the LIMS is effectively installed and that the WAJ is able to effectively and sustain ably operate and maintain the system. This is needed to ensure that LIMS can make its potential contribution to the overall effective operation of the lab.

LIMS software was procured to effectively manage data at the Central Laboratory of WAJ. It was installed only in February 2000, well after the end of WQIC. WAJ Lab staff is currently testing the system.

This consultancy came to assure proper management of the LIMS software during the transition period from LOIS system to LIMS system taking into consideration the importance of handling the data in this critical period. (Once the LIMS system is fully operational, and the LOIS system has been fully replaced, then a further major activity would be needed to properly integrate into the new system the historical data remaining in the old system. The timing of this activity would depend upon the successful completion of the transition period, which could take up to one year.)

Scope of Work

1. Supervise the installation procedure of LIMS system on the new PCs to be acquired by the labs.

2. Set up an action plan for proper management of the LIMS software. This action plan should be part of the standard operating procedure that should be used by the Information & Quality assurance Section as a reference document in their daily work.

3. Assist the Information & Quality Assurance Section to highlight the gaps and problems to be solved during the first year of operation of LIMS, so enable the WAJ Labs to fully utilize the resources available.

4. Define the status of data currently available under the LOIS system used currently by the WAJ labs.

5. Assist WAJ in setting up the appropriate environmental support to enable LIMS software to operate effectively.

Purpose of Report:

This report is intended to illustrate the progress made during the mission between 1/6/2001 to 30/7/2001.

Current status of LIMS in the WAJ Labs:

The LIMS software currently available in the WAJ Labs is SQL*LIMS V4.0.16 and Oracle is V 8.1.6.

This mission in the WAJ Labs focused on helping the WAJ Labs define obstacles currently available in the system, staff or environment, obstacles that are keeping the WAJ labs from implementing and starting the usage of the LIMS system, in addition the mission started solving part of these problems and aimed to alleviate and remove as many obstacles as possible within the time frame of the mission.

The first objective of the mission was met and all the obstacles standing in the way of implementing the SQL*LIMS software in the Labs were defined, in addition solutions were proposed and sometimes implemented, but due to:

- The complexity of the system and its requirements.
- The inexperience of the WAJ lab computer staff.
- The requirements from other departments in the MWI.
- The unavailability of a maintenance contract with the Applied Biosystems Company.
- Occurrence of an unpredictable problem in 11/7/2001 and was caused by the lack of experience of the WAJ lab computer staff in the Database administration (and specifically backup procedures). This problem led to the loss of the database base files that were customized by:

    - The Applied Biosystems representative in feb/2001
    - The WAJ lab Staff and myself since feb/2001.
    - The Latest upgrade done by the Applied Biosystems for the LIMS software.

This problem made the LIMS system Out of operation for 2 weeks, through which we have tried every possible way to retrieve the system but in vain, finally a decision was taken in consultation with the applied Biosystems to reinstall LIMS, and that took some time also.

Thus actual implementation of some of the solutions was delayed for 2 weeks, in addition to the fact that the Applied Biosystems were delaying their response to our queries until the contract was signed (that is on 1/8/2001 which was the end of my mission in the labs); A

The problem that occurred on 11/7/2001 led to the loss of all the work that has been done on the system since 17/feb/2001, which made us change the main tasks of this mission and focus on solving the problem and put the system online again after it has stopped functioning for several days.

The LIMS system as I leave it in the WAJ Labs, needs some customization, the customization that was lost on 11/7/2001, some of the customization was repeated but some other steps must be advised by the Applied Biosystems, because the customization was done before by them but was not documented which makes the WAJ labs unable to repeat what was done, till AB send a detailed report with the customization that needs to take place. AB were approached several times regarding the customization but they did not answer, this might be due to the fact that we have no maintenance contract signed with them. AB did not send anything official that says this but they are not responding to our e-mails. It is worth mentioning here that Applied Biosystems were very

helpful during the Occurrence of the problem in 11/7/2001 and they helped us till we reinstalled the LIMS software again, but after that they stopped responding to our inquiries.

After the maintenance contract is signed with AB, we expect them to respond to WAJ labs regarding the customization required, we also expect them to document in details what was done this time.

In the meanwhile the WAJ lab staff will resume the process of giving sample plans (codes) for all the water sources they deal with according to the methodology listed in details in this report. It is expected that by the end of August all the sources get the proper sample plan (identification codes).

After the above tasks are completed, the LIMS software would be ready for usage by the WAJ LABS. It should be emphasized here that the LIMS system is a very powerful tool but it needs to be properly managed and utilized by experienced staff and when I say that the system is ready for usage, it is the very basic usage of the system and not full utilization of the capabilities of the system and if the WAJ labs need to fully utilize the systems facilities then they should have the proper expertise to do it.

This mission has achieved the tasks required in the scope of work, it could have been more successful if the problem that occurred on 11/7/2001 on the LIMS system never happened, never the less that problem enlightened the WAJ lab management to the type of problem that can happen because of the lack of expertise in computer systems in the labs.

Thus and in reference to all the above, it is strongly recommended that the WAJ labs get technical assistance missions similar to this mission but at least for the next 6 months upto1 year, which is a critical period for the Labs transition from LOIS to LIMS system. Once the system is up and running and management procedures are set, then the currently available staff is capable to sustain the system and keep it running.

Mission progress.

* The first task performed under this mission was setting up a “Plan of operation for the LIMS software in the WAJ Labs” This task was done for the WAJ Labs to help them define all the steps necessary and needed to start implementing and using the LIMS software.

*This mission was intended to help WAJ Labs define all the problems related to the implementation of the LIMS software and help as much as possible within the time given to solve part of these problems. Given the limited time period for this mission it is was not expected to carry out all the tasks listed in the plan of operation, thus most important tasks were addressed first, WAJ Labs should carry out the rest of the tasks after the end of the mission with the help of Applied Biosystems Company (the Software producing and maintaining company) and the Labs should be provided by technical assistance missions until they are capable to carry on the daily tasks required for the system.

* One of the tasks under this mission was to define the status of data currently available under the LOIS system used currently by the WAJ labs. This task was fulfilled and coordinated with Mr. HowWong who had a dedicated mission under this project for this purpose; the out come of our investigation is described in details in his report.

Plan of operation for the LIMS software in the WAJ Labs

Task 1:
Installation of SQL*LIMS and oracle software on all client PCs.

Task 2:
Enrolling all users accounts on SQL*LIMS, this involves:

Adding and checking of all job types
Adding and checking of all data groups.
Adding and checking all user classes.
Adding and checking all phone and address classes.

Task 3:
Documenting all the user accounts with all the Privileges and type of access they got.

Task 4:

Carry out a typical logging of samples process and define all problems related to Sample logging, the problems that can be solved locally in the Labs or with the help of MWI, ARD will be solved or at least steps for solving the problems should be set, others related to the LIMS software and dependent on the Applied Biosystems (AB) should be addressed to (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

Task 5:
Carry out a typical Results entry process and define all problems related to Sample results entry by the analysts in the different labs, the problems that can be solved locally by the Labs or with the help of MWI, ARD will be solved or at least steps for solving the problems should be set, others related to the LIMS software and dependent on the Applied Biosystems (AB) should be addressed to (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

Task 6:
Carry out the process Samples approval and rejection which is a task done by the head of sections, define any problem related to the approval process, solve or at least setup steps for solving the problems that can be solved locally by Lab staff, MWI and ARD, other problems related to the LIMS software and dependent on the Applied Biosystems (AB) should be addressed to (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

Task 7:
Carry out the process of final report producing, define any problem related to this task, help solve the problem if it can be solved locally or ask for the help of Applied Biosystems (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

Task 8:

Help Set up the mechanism necessary to export data from the LIMS software to EXCEL which will allow the users to access their data under the EXCEL environment which is necessary for any further manipulation or interpretation of the data, this facility of interpretation and presentation of data is not currently available under LIMS although the facility for development under LIMS (ORACLE) is very powerful and flexible, but needs a lot of work and experience.
The method suggested for the exporting mechanism is using the ODBC driver, we need at least to install it, configure it and make sure that at least professional users in the Lab can use it.

Task 9:
Connect the bar code reader, here we have to solve the problem regarding how can we allow the analysts in the labs use their bar code readers to log their samples so that it is known that they have received their samples but without having any privilege to delete the sample.

Task 10:
Connect the bar code printer and solve any problems related to it.

Task 11:
Checking of all the reports that have been tailored for the use in the WAJ labs by the AB staff, currently there are major problems in the most basic reports available and they should be completely operational before we can start using LIMS.

Task 12:
Setup backup procedures for the Data, a Standard Operation Procedure should be implemented in the WAJ Labs to insure safety of data.

Task 13:
Train the different type of users on the usage of the LIMS software, each user will be trained on the activities he/she needs to do under LIMS (i.e. the sample logger should learn how to log a sample to the system, an analyst should be able to enter the result, and view it, the head of section should be able to view and approve and modify…etc)

Task 14:
Start usage of the LIMS system in all the WAJ LAB sections, this process will be run in parallel with the LOIS system for at least 2 months, then after 2 months the situation in the labs should be assessed to see if the decision of final migration from the LOIS system can be taken.

Task 15:

Setup standard backup procedures for the LIMS system, which will prevent any loss of data problems in the future. This will ensure that the problem that occurred in 11/7/2001 will not occur again.

Progress in the different Tasks:

The Tasks are ordered according to sequence of operation and importance, some of these tasks assumes that previous tasks were addressed, others independent of previous tasks

Progress under Task 1:
*Installation of SQL*LIMS and oracle software on all client PCs.*

- The WAJ Labs purchased 10 new PCs.
- Following software was installed on these PCs:
    1. Windows 2000 Professional.
    2. MSOffice 2000.
    3. Oracle runtime option.
    4. SQL*LIMS
    5. Norton virus scanner.
    6. WinZip.
    7. Visual FoxPro V 6.0.

PCs were configured to run LOIS system and the Export program (where needed), in addition to appropriate definitions for network printers.

Currently all PCs are ready to run LIMS software.

Task: Done.

Progress under Task 2:
*Enrolling all users accounts on SQL*LIMS*

This task involves:

Adding and checking of all job types
Adding and checking of all data groups.
Adding and checking all user classes.
Adding and checking all phone and address classes.

All user names were checked, some were deleted, some were modified and others were added, this involved rechecking of all:

1. User names
2. Job Types
3. Data groups
4. Roles assigned to Job types.

All user names are now ready to be used for end users with proper privileges for accessing data (i.e. Only concerned parties should have access to data)

Status: Done

Progress under Task 3:

Documenting all the user accounts with all the Privileges and type of access they got.

Annexes A and B shows the final list drafted in 20/6/2001 for all the users.

Status: Done

Progress under Task 4:

Task 4: Carry out a typical logging of samples process and define all problems related to Sample logging, the problems that can be solved locally in the Labs or with the help of MWI, ARD will be solved or at least steps for solving the problems should be set, others related to the LIMS software and dependent on the Applied Biosystems (AB) should be addressed to (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

The process of sample logging is mainly done in the information department; special user names that have the job types and roles that enable logging of samples are given to the logging clerks. Currently there are many problems regarding the process of sample logging, before we can solve these problems working under LIMS is not possible.

Important obstacles that needs solving before samples can be logged into the LIMS system:

The following is a list of the obstacles faced when we tried to log in samples on the LIMS system:

1- **Finalization of request form (To be solved by WAJ LAB.)**

The logging starts with the request form that is filled either in the field or by the information section staff member who receives the samples from the collectors.

The request form was not in its final form and needed to be finalized in order to start working with it. It was suggested that a meeting should be held to finalize this issue in the labs.
Status: Lab staff meat, the Final request was finalized, done.

2- **Definition of Project account codes.**

A field that needs to be filled on the request form is the Project account codes, these codes were reviewed and a new coding system was adopted, this coding system is described in details below. All projects were reviewed and the new code was given to them, the coding design is defined below.

Status: Currently WAJ LAB staff defined all the project account codes, DONE.

<u>Definition of Project Account Codes</u>

The following design for the project account code was suggested, needs finalization and then mapping for all projects into this code.

Project account code format

Letter no.	Description
1	Source
2,3	Governorate initials.
4	Department
5	Section

Source initials:

The source initials are defined as follows:

Code	Source
M	MWI
W	WAJ
L	LIMA
P	Private
H	Ministry Of Health
I	Ministry Of Irrigation
R	Water Resources
V	Jordan valley Authority

Governorate initials:

Governorate	Initials
Amman	AM
Balqa	BA
Irbid	IR
Tafeileh	TA
MAAN	MN
Mafraq	MF
Zarqa	ZA
Aqaba	AQ
Kerak	KA
Ajloun	AJ
Jerash	JA
Madaba	MA

Department initials:

This is the department in the source, if available:

Code	Department
P	Pumping
D	Drilling
A	Administration
L	Lab
C	Licensing

Section initials:

This is the section in the source department, we have now the sections in the WAJ labs and the sections in the MWI planning department.

For the Laboratories sections	
Q	**Q**uality section in WAJ Lab
E	**E**nvironment section in WAJ lab
S	**S**urface water monitoring section in MWI
G	**G**round Water monitoring section in MWI
P	**P**rivate Wells
M	**P**umping test section

The final List for all the Project account codes are listed in Annex –C-

3- Sample plan code definition (TO be solved by WAJ LAB in cooperation with MWI-WIS)

Another field that needs to be filled and still has some problems, is the locations code or Sample plan. The definition of sample Plan codes is described below in details, the sample plan was designed by the WAJ Labs and then reviewed under this mission with input from the MWI-WIS staff to come up with the best possible design. The tables motioned in the design below are subject to modification by the WAJ LAB staff as new conditions arise.

Defining Sample plan codes (Location codes) for resources analyzed by the WAJ Labs

A pre-requisite for running the LIMS software properly is to define a code for all the locations that the WAJ labs collects samples from.
The location code in the LIMS system is called Sample plan and is composed of 7 letters, it has the following format:

Letter no	Contents
1	Source type
2	Source description
3,4,5,6,7	Indicative 5 letters from source name

It is also important to know the Governorate, village code and Coordinates of the source, so that they can be entered as an attribute attached with the sample plan.

The source type should be picked up from the following list designed by WAJ lab staff:

TYPE OF SOURCE	CODE
WELL	W
SPRING	S
P.S	P
BOOSTER	B
RESERVOIR	R
DAM	D
CANAL+ SAIL	C
DEMOSTIC T.P	T
DRINKING WATER T.P	E
FACTORY T.P	F
NETWORK	N
POND	L

The description for the source types is as follows:

Disc. Of Type	CODE
EFFLUENT	E
INFLUENT	I
DRY BASIN	D
FILTER BAISN	F
DIGESTER	G
THICKNER	K
PRIMARY SETTLING	P
SECOND SETTLING	S
AREATION BAISN	A
SECOND SETTLING TO DIQ	Q
RETURNED SLUDGE	R

And when the source type is a factory the description of source represents the factory type using the codes shown below:

FACTORY TYPE	CODE
CHEMICAL	C
FOOD	F
DAIRY	D
OPTICS	O
DETERGENT	D
CEMENT	N
MEDICINAL	M
SLUGTER	S
PAPER	P
TEXTILE	T
STEEL	L

The governorate initial are shown below:

Governorate	Initials
Amman	AM
Balqa	BA
Irbid	IR
Tafeileh	TA
MAAN	MN
Mafraq	MF
Zarqa	ZA
Aqaba	AQ
Kerak	KA
Ajloun	AJ
Jerash	JA
Madaba	MA

Methodology for defining the Sample Plan (or Location codes) and related attributes for the WAJ Labs:

Samples from around 3500 locations are analyzed in the WAJ Labs; all these locations need location codes identification according to the previous format adopted by the WAJ Labs to be used in the entry of samples for the LIMS system. No sample can be entered if the Location code (called Sample plan by the LIMS system) is not identified, thus all the Location codes must be identified.

To help identifying the Location codes the following mechanism was suggested:

For springs:

All spring names monitored by the labs were provided to the ministry – springs monitoring section, and the appropriate MWI station id was given to these spring locations.

The following information from the oracle data base system in the ministry was provided.

- Spring name
- Palestine grid north
- Palestine grid East
- Governorate code

The Ministry could not provide for the village code, so it was agreed upon in a meeting in the ministry with representatives from the Information sections in the ministry and in WAJ to use the list of codes available at the Department of land and survey, the collector of the sample should identify the source village name or town name, when the sample gets to the labs, the lab staff will map that name into a code using the list provided and give the proper code to the village and thus be able to define a proper sample plan (location code).

For Governorates Amman, Irbid and Aqaba, Shape files that represent the polygons for the villages within the governorates are available at the OMS project in WAJ, use of these shape files is recommended and the WAJ Labs can give a list of all the springs locations that has X, Y coordinates to the OMS project and they can define the village and governorates where the well is located. The Idea of using the GIS for defining the correct village or town code for the sources in the other governorates was abandoned because the Department of Land and survey does not have polygons for all the villages in Jordan. For the other governorates the list from the Department of land and survey should be used.

Current status: a list of all springs has been provided by the MWI information section with all the information required, the WAJ labs are putting the Sample plans but leaving the village code empty and will fill it as soon as it comes from the field, Some springs were not identified by the MWI because of a difference in the names, thus a meeting should be held between the WAJ LAB field staff and MWI staff to resolve any problem related to these springs, a list of these springs is attached in Annex –D- .

For Wells:

Samples are collected from wells by the following departments:

MWI monitoring section
WAJ Labs
Drilling department – WAJ
The administrations in the governorates.
Private wells department-WAJ.

These different departments use different naming for the wells and this creates a problem if we need to match the names of wells we have in the labs with the names available in the MWI water data bank system in order to get the coordinates and Station IDN and put it in the map to get the governorate.

As much as possible we need to solve this problem once and for all using the following mechanism:

1- List of all names was provided to the MWI-WIS department.
2- Names of known wells was identified and given a Station IDN code as used by the MWI-WIS system, along with the following information:

- Well name
- Palestine grid north
- Palestine grid East
- Governorate code

Again the Ministry could not provide for the village code, so it was agreed upon in a meeting in the ministry with representatives from the Information sections in the ministry and in WAJ to use the list of codes available at the Department of land and survey, the collector of the sample should identify the source village name or town name, when the sample gets to the labs, the lab staff will map that name into a code
Using the list provided and gives the proper code to the village and thus is able to define a proper sample plan (location code).

For Governorates Amman, Irbid and Aqaba, Shape files that represent the polygons for the villages within the governorates are available at the OMS project in WAJ, use of these shape files is recommended and the WAJ Labs can give a list of all the well locations that has X, Y coordinates to the OMS project and they can define the village and governorates where the well is located. The Idea of using the GIS for defining the correct village or town code for the sources in the other governorates was abandoned because the Department of Land and survey does not have polygons for all the villages in Jordan. For the other governorates the list from the Department of land and survey should be used.

Names of unknown wells should be consulted with the collecting departments and should be defined properly to either give appropriate name or at least give the governorate and village or town where the well is located.

Current status: Currently the ministry is preparing the wells list, it should then be forwarded to the Labs and same work done for springs should be done to the wells.

For all other source types:

The USAID project in the Ministry provided calibrated GPS systems for the WAJ labs and trained the staff who will carry the GPS systems to the field on the usage of these GPS systems, it is expected that within 1 month period (by the end of August 2001) the labs would collect all the x-y coordinates (Palestinian coordinates) for all water resources tested for water quality.

An entry form was prepared for the collectors of the coordinates; the following items are registered in these forms:

- X, Y coordinates
- Arabic and English name of site
- Governorate
- Village name in Arabic if it is known
- The Ministry identification number printed on the plates of the wells if available.

Annex –E- shows this form.

To define the Village codes for each source:

For sources in Governorates (AMMAN, IRBID, AQABA)

After the coordinates are collected the names of resources (other than Wells and springs) and their coordinates should be entered to the GIS system along with the shape files for
The village and towns (Available in the Ministry with OMS project), this will enable identifying the village or town code.

The above-mentioned work should be coordinated with:

- OMS project (Mr. Samer – ext. no. 443 WAJ)
- MWI-WIS (Mr. Edward Qunqar – MWI)

For all the other sources in the other governorates of Jordan:

Currently shape files with polygons for the rest of the villages of Jordan are not yet finalized by the Department of Land and survey. So in order to rush the process of defining the appropriate village code the WAJ LAB should do the following:

The collector of the coordinates information will also get the village name where the source is located so that if the village polygon s are not available, then the village name can be mapped into a code using a list provided by the department of Land and survey for all villages in Jordan and their codes.

Current Status: Currently the WAJ LABS are collecting the information mentioned above and the LABS are waiting for the purchase of the rest of the GPS system to rush this process.

Benefits gained from the identification of the x,y coordinates of samples sources:

The process of defining the exact x,y coordinates of the sources of samples analyzed by the labs are:

- Exactly and for the first time identify the coordinates of sample sources collected or analyzed by the WAJ labs.
- Draw a map that identifies the resources.
- Identify the required items needed to define the sample plan for these sources
- The ministry's Water information system and Geographic information system will benefit from the identification of these locations.

3- Automatic printing of request form should be in 2 copies. (TO be solved by PE.)

After a sample is logged, a laboratory note book is automatically printed, this note book is printed for each laboratory that is requested to analyze, the procedure in the labs requires 2 copies instead of one copy to be printed in order to send one to the concerned lab and the other copy is signed by the receiver of the sample in the lab and considered as a chain of custody record.

This problem was followed up and can be solved by modification on the report created by the PE staff.

4- No Automatic printing of request form for the private sample. (TO be solved by PE.)

Private samples do not have a Sample plan or location code because they are sometimes analyzed only for one time, thus these samples are logged in a different way; instead of entering the sample plan and from it automatically get the location description and address and the rest of details about the source, the logging should include the name of the source and its address.

The developer of the laboratory notebook report might did not attach a proper status action for these sample plans, so they need to be modified.

Status: Waiting for the maintenance contract with PE

Task 5:

Carry out a typical Results entry process and define all problems related to Sample results entry by the analysts in the different labs, the problems that can be solved locally by the Labs or with the help of MWI, ARD will be solved or at least steps for solving the problems should be set, others related to the LIMS software and dependent on the Applied Biosystems (AB) should be addressed to (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

Obstacles found:

In the results entry process the following obstacle was encountered:

As the section receives the sample, the analyst who received the sample needs to log reception of the sample using the bar code reader available in the section and using the label that was printed out with the request form, in order to enable the analyst to do that we need to give him/her the "Log_samples" role which means that he/she will also be able to delete any sample_id, add samples and this is not acceptable, the analyst should only be given a specific role that allows him/her only to confirm reception of a sample in their section.

To go around the problem the analyst now sends a memo to confirm reception of sample instead of logging reception as facilitated by LIMS.

Current status: Pending

PE was addressed with these problems, PE responded, the implementation of the solution was delayed because of the problem that occurred in 11/7/2001. Should be followed up by AB or another mission since time did not allow following up this problem.

Task 6:
Carry out the process Samples approval and rejection which is a task done by the head of sections, define any problem related to the approval process, solve or at least setup steps for solving the problems that can be solved locally by Lab staff, MWI and ARD, other problems related to the LIMS software and dependent on the Applied Biosystems (AB) should be addressed to (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

Obstacles found:

In the approval process 2 obstacles were encountered:

1- The head of section can approve the whole sample, which includes all analysis from all sections for the same sample id. The head of section should only be able to approve his sections results.

2- a sample can be approved even if the results of the sample are not entered, this should not be allowed, and instead only if all results are entered then a sample can be approved.

Current status: Pending

PE was addressed with these problems, PE responded, the implementation of the solution was delayed because of the problem that occurred in 11/7/2001. Should be followed up by AB or another mission since time did not allow following up this problem.

Task 7:
Carry out the process of final report producing, define any problem related to this task, help solve the problem if it can be solved locally or ask for the help of Applied Biosystems (AB), hoping to solve it ASAP, else we need to wait till the maintenance contract is signed.

The final report has one problem; the units in the final report are not converted to the desired units.

Current status: Pending

Time did not allow investigation in this problem

Task 8:

Help Set up the mechanism necessary to export data from the LIMS software to EXCEL which will allow the users to access their data under the EXCEL environment which is necessary for any further manipulation or interpretation of the data, this facility of interpretation and presentation of data is not currently available under LIMS although the facility for development under LIMS (ORACLE) is very powerful and flexible, but needs a lot of work and experience.
The method suggested for the exporting mechanism is using the ODBC driver, we need at least to install it, configure it and make sure that at least professional users in the Lab can use it.

Current Status: DONE
The mechanism for this procedure, Annex -F- describes the detailed procedure for this operation

Task 9:
Connect the bar code reader, here we have to solve the problem regarding how can we allow the analysts in the labs use their bar code readers to log their samples so that it is known that they have received their samples but without having any privilege to delete the sample.

Current status: Pending, needs further follow up

Task 10:

Connect the bar code printer and solve any problems related to it
No problems occurred.

Current Status: Done

Task 11:
Checking of all the reports that have been tailored for the use in the WAJ labs by the AB staff, currently there are major problems in the most basic reports available and they should be completely operational before we can start using LIMS.

The problems in these reports were discussed in details under the previous tasks, specifically tasks no. 4,7.

Task 12:

Setup backup procedures for the Data, a Standard Operation Procedure should be implemented in the WAJ Labs to insure safety of data.

This task was very important to accomplish under the current critical situation in the WAJ labs. Due to the inexperience in the backup mechanisms the WAJ Labs lost in 11/7/2001 the LIMS system and all customizations performed by different people on the system.

A standard backup procedure was set up for the WAJ Labs and was documented and delivered to the WAJ Labs, this procedure describes in details the required daily and weekly backup in addition to the tapes required for the backup and the an automatic procedure was built to be run on daily basis on the server system to backup the database.

Current status: Done

Task 13:

Train the different type of users on the usage of the LIMS software, each user will be trained on the activities he/she needs to do under LIMS (i.e. the sample logger should learn how to log a sample to the system, an analyst should be able to enter the result, and view it, the head of section should be able to view and approve and modify…etc)

The WAJ Labs should perform this task before the LIMS system is started in the labs, the users should be trained in groups, and each group should be trained only on the operations to be performed by that group.

Users should be arranged in the following Groups for training:

Analysts
Head of sections
Data logging clerks

They can further be subdivided according to the data groups they are responsible for; the LIMS managers in the Labs should give these basic training courses.

Task 14:

Start usage of the LIMS system in all the WAJ LAB sections, this process will be run in parallel with the LOIS system for at least 2 months, then after 2 months the situation in the labs should be assessed to see if the decision of final migration from the LOIS system can be taken.

PENDING: till all the above tasks are completely done

Annex –A-

List of users on the LIMS system in 20/6/2001.

NO.	First Name	Oracle Login	Data Group	JobType
1	Abd Al-Nasser	GHAZAWI	BIO	ANALYST
			GLOBAL	ANALYST
2	Abdulla	ABDULA	BIO	VIEWING
			ENVIRONMENT	VIEWING
			GLOBAL	VIEWING
			MICRO	VIEWING
3	Ahmad	HAMADA	CHEM/INORG	ANALYST
			GLOBAL	ANALYST
4	Ahmad	MADHAN	GLOBAL	LOGING
			INFORMATION	LOGING
5	Amera	NUARA	CHEM/RARE	ANALYST
			GLOBAL	ANALYST
6	Anuar	LUBANI	GLOBAL	ANALYST
			MICRO	ANALYST
7	Basema	ABUENAN	BIO	LOGING
			CHEM/INORG	LOGING
			CHEM/ORG	LOGING
			CHEM/ORG1	LOGING
			CHEM/RARE	LOGING
			ENVIRONMENT	LOGING
			GLOBAL	LOGING
			INFORMATION	LOGING
			ISOTOP/ALPHA	LOGING
			ISOTOP/C14	LOGING
			ISOTOP/RN	LOGING
			ISOTOP/STABLE	LOGING
			ISOTOP/T	LOGING
			ISOTOP/U	LOGING
			MICRO	LOGING
			MOBLE	LOGING
			QUALITY	LOGING
			QUQLITY	LOGING
8	Basil	SULIMAN	GLOBAL	ANALYST
			MICRO	ANALYST
9	Dakhlala	DAKHLALA	BIO	VIEWING
			ENVIRONMENT	VIEWING
			GLOBAL	VIEWING
			MICRO	VIEWING
10	Eng. Zakaria	DIRECTOR	BIO	VIEWING
			CHEM/INORG	VIEWING
			CHEM/ORG	VIEWING
			CHEM/ORG1	VIEWING
			CHEM/RARE	VIEWING
			GLOBAL	VIEWING
			ISOTOP/ALPHA	VIEWING
			ISOTOP/C14	VIEWING
			ISOTOP/RN	VIEWING

			ISOTOP/STABLE	VIEWING
			ISOTOP/T	VIEWING
			ISOTOP/U	VIEWING
			MICRO	VIEWING
			MOBLE	VIEWING
			QUALITY	VIEWING
			QUQLITY	VIEWING
11	E'tedal	HAMMAM	CHEM/RARE	ANALYST
			GLOBAL	ANALYST
12	Fadwa	MAHMOUD	BIO	ANALYST
			GLOBAL	ANALYST
13	FAROUQ	DAWABSHEH	BIO	HEAD SECTION
			GLOBAL	HEAD SECTION
14	Fateh	RADWAN	BIO	VIEWING
			ENVIRONMENT	VIEWING
			GLOBAL	VIEWING
			MICRO	VIEWING
15	Ghadeer	ZERKANI	BIO	VIEWING
			ENVIRONMENT	VIEWING
			GLOBAL	VIEWING
			MICRO	VIEWING
16	Ghazi	NAHAR	BIO	ANALYST
			GLOBAL	ANALYST
17	HAMDAN	HAMDAN	BIO	ANALYST
			GLOBAL	ANALYST
18	Hani	ATTARH	GLOBAL	ANALYST
			ISOTOP/STABLE	ANALYST
19	Heam	SAAYDEH	CHEM/ORG	ANALYST
			CHEM/ORG1	ANALYST
			GLOBAL	ANALYST
20	Isma'el	EMSALAM	GLOBAL	ANALYST
			ISOTOP/C14	ANALYST
			ISOTOP/RN	ANALYST
21	Ja'far	RADAYDEH	CHEM/ORG	ANALYST
			CHEM/ORG1	ANALYST
			GLOBAL	ANALYST
22	Jamal	JAWAWDEH	GLOBAL	ANALYST
			ISOTOP/ALPHA	ANALYST
23	Jameleh	JAMELEH	GLOBAL	ANALYST
			MICRO	ANALYST
24	lamia	NIMRIL	CHEM/INORG	ANALYST
			GLOBAL	ANALYST
25	Loai	ALLANN	GLOBAL	VIEWING & ENTRY
			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
26	Maher	EHRESHAN	CHEM/INORG	VIEWING & ENTRY
			CHEM/ORG	VIEWING & ENTRY
			CHEM/ORG1	VIEWING & ENTRY
			CHEM/RARE	VIEWING & ENTRY
			GLOBAL	VIEWING & ENTRY
			ISOTOP/ALPHA	VIEWING & ENTRY

			ISOTOP/C14	VIEWING & ENTRY
			ISOTOP/RN	VIEWING & ENTRY
			ISOTOP/STABLE	VIEWING & ENTRY
			ISOTOP/T	VIEWING & ENTRY
			ISOTOP/U	VIEWING & ENTRY
			MICRO	VIEWING & ENTRY
			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
27	Majeda	FATAH	CHEM/RARE	ANALYST
			GLOBAL	ANALYST
28	Maram	MARAM	GLOBAL	ANALYST
			MICRO	ANALYST
29	Mohamad	AZZEZ	CHEM/INORG	ANALYST
			GLOBAL	ANALYST
30	Mohamad	HURANI	GLOBAL	ANALYST
			ISOTOP/U	ANALYST
31	Mohamad	KHAWALDEHM	GLOBAL	VIEWING & ENTRY
			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
32	Mohamad	MOHAMADA	BIO	MANAGER
			CHEM/INORG	MANAGER
			CHEM/ORG	MANAGER
			CHEM/ORG1	MANAGER
			CHEM/RARE	MANAGER
			GLOBAL	MANAGER
			INFORMATION	MANAGER
			ISOTOP/ALPHA	MANAGER
			ISOTOP/C14	MANAGER
			ISOTOP/RN	MANAGER
			ISOTOP/STABLE	MANAGER
			ISOTOP/T	MANAGER
			ISOTOP/U	MANAGER
			MICRO	MANAGER
			MOBLE	MANAGER
			QUALITY	MANAGER
			QUQLITY	MANAGER
33	Muhee	ABABNEH	GLOBAL	ANALYST
			ISOTOP/T	ANALYST
34	Nahla	BAZADOG	BIO	LOGING
			CHEM/INORG	LOGING
			CHEM/ORG	LOGING
			CHEM/ORG1	LOGING
			CHEM/RARE	LOGING
			GLOBAL	LOGING
			INFORMATION	LOGING
			ISOTOP/ALPHA	LOGING
			ISOTOP/C14	LOGING
			ISOTOP/RN	LOGING
			ISOTOP/STABLE	LOGING
			ISOTOP/T	LOGING

			ISOTOP/U	LOGING
			MICRO	LOGING
			MOBLE	LOGING
			QUALITY	LOGING
			QUQLITY	LOGING
35	NAWAL	SUNNA	BIO	VIEWING
			CHEM/INORG	VIEWING
			CHEM/ORG	VIEWING
			CHEM/ORG1	VIEWING
			CHEM/RARE	VIEWING
			GLOBAL	VIEWING
			ISOTOP/ALPHA	VIEWING
			ISOTOP/C14	VIEWING
			ISOTOP/RN	VIEWING
			ISOTOP/STABLE	VIEWING
			ISOTOP/T	VIEWING
			ISOTOP/U	VIEWING
			MICRO	VIEWING
			MOBLE	VIEWING
			QUALITY	VIEWING
			QUQLITY	VIEWING
36	Nemer	ABADI	GLOBAL	VIEWING & ENTRY
			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
37	OLA	MEMEH	GLOBAL	ANALYST
			MICRO	ANALYST
38	Omar	ABAHREH	GLOBAL	ANALYST
			MICRO	ANALYST
39	Omar	BANATT	CHEM/ORG	ANALYST
			CHEM/ORG1	ANALYST
			GLOBAL	ANALYST
40	RANAD	TUFFAHA	CHEM/INORG	HEAD SECTION
			CHEM/ORG	HEAD SECTION
			CHEM/ORG1	HEAD SECTION
			CHEM/RARE	HEAD SECTION
			GLOBAL	HEAD SECTION
41	Rateb	EDWAN	BIO	HEAD SECTION
			CHEM/INORG	HEAD SECTION
			CHEM/ORG	HEAD SECTION
			CHEM/ORG1	HEAD SECTION
			CHEM/RARE	HEAD SECTION
			GLOBAL	HEAD SECTION
			ISOTOP/ALPHA	HEAD SECTION
			ISOTOP/C14	HEAD SECTION
			ISOTOP/RN	HEAD SECTION
			ISOTOP/STABLE	HEAD SECTION
			ISOTOP/T	HEAD SECTION
			ISOTOP/U	HEAD SECTION
			MICRO	HEAD SECTION
			MOBLE	HEAD SECTION
			QUALITY	HEAD SECTION

			QUQLITY	HEAD SECTION
42	Rema	ADAMAT	BIO	VIEWING & ENTRY
			CHEM/INORG	VIEWING & ENTRY
			CHEM/ORG	VIEWING & ENTRY
			CHEM/ORG1	VIEWING & ENTRY
			CHEM/RARE	VIEWING & ENTRY
			GLOBAL	VIEWING & ENTRY
			ISOTOP/ALPHA	VIEWING & ENTRY
			ISOTOP/C14	VIEWING & ENTRY
			ISOTOP/RN	VIEWING & ENTRY
			ISOTOP/STABLE	VIEWING & ENTRY
			ISOTOP/T	VIEWING & ENTRY
			ISOTOP/U	VIEWING & ENTRY
			MICRO	VIEWING & ENTRY
			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
43	Safwan	QUDAH	GLOBAL	VIEWING & ENTRY
			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
44	SALI	ZENATI	GLOBAL	HEAD SECTION
			MICRO	HEAD SECTION
45	SQL*LIMS	PENLIMS	ASSISTANT	SQLLIMS MANAGER
			BIO	SQLLIMS MANAGER
			CHEM/INORG	SQLLIMS MANAGER
			CHEM/ORG	SQLLIMS MANAGER
			CHEM/ORG1	SQLLIMS MANAGER
			CHEM/RARE	SQLLIMS MANAGER
			DIRECTOR	SQLLIMS MANAGER
			ENVIRONMENT	SQLLIMS MANAGER
			GLOBAL	SQLLIMS MANAGER
			INFORMATION	SQLLIMS MANAGER
			ISOTOP/ALPHA	SQLLIMS MANAGER
			ISOTOP/C14	SQLLIMS MANAGER
			ISOTOP/RN	SQLLIMS MANAGER
			ISOTOP/STABLE	SQLLIMS MANAGER
			ISOTOP/T	SQLLIMS MANAGER
			ISOTOP/U	SQLLIMS MANAGER
			MICRO	SQLLIMS MANAGER
			MOBLE	SQLLIMS MANAGER
			QUALITY	SQLLIMS MANAGER
			QUQLITY	SQLLIMS MANAGER
46	Suzan	KELANI	GLOBAL	HEAD SECTION
			ISOTOP/ALPHA	HEAD SECTION
			ISOTOP/C14	HEAD SECTION
			ISOTOP/RN	HEAD SECTION
			ISOTOP/STABLE	HEAD SECTION
			ISOTOP/T	HEAD SECTION
			ISOTOP/U	HEAD SECTION
47	Taha	SAMARA	GLOBAL	VIEWING & ENTRY

			MOBLE	VIEWING & ENTRY
			QUALITY	VIEWING & ENTRY
			QUQLITY	VIEWING & ENTRY
48	Tayser	KHDRA	BIO	ANALYST
			GLOBAL	ANALYST
49	Zeyad	QUASMEH	GLOBAL	ANALYST
			ISOTOP/STABLE	ANALYST

Annex –B-
List of Jobtypes and rolls for the LIMS system in WAJ LABS.

JOP TYPE	Rolls
ANALYST	ENTER_RESULTS
	LIMS_PUBLIC
	VIEW_LAB_DATA
	VIEW_SPECIFICATIONS
CREATING TEMPLATE	BUILD_TEMPLATES
CUSTOMER	CUSTOMER
	LIMS_PUBLIC
EXCEL USER	LIMS_PUBLIC
HEAD SECTION	ADD_PROFILES
	ADD_REPLICATES
	ADD_VERSIONS
	APPROVE_DATA
	CHANGE_CONDITIONS
	CHANGE_RESULTS
	ENTER_RESULTS
	LIMS_PUBLIC
	VIEW_LAB_DATA
	VIEW_SPECIFICATIONS
	WAJ_RESULTS
LOGING	ADD_PROFILES
	ENTER_RESULTS
	LIMS_PUBLIC
	LOG_SAMPLES
	RUN_REPORTS
	VIEW_LAB_DATA
SQLLIMS MANAGER	ADD_CHILD_SAMPLES
	ADD_PROFILES
	ADD_REPLICATES
	ADD_VERSIONS
	ADHOC_ATTRIBUTES
	APPROVE_DATA
	APPROVE_SPECIFICATIONS
	APPROVE_WORKLIST
	ARCHIVE_DATA
	ASSIGN_WORK
	BUILD_TEMPLATES
	BUILD_TEMPLATES_FROM_LOGGING
	CHANGE_APPROVED_RESULTS
	CHANGE_CONDITIONS
	CHANGE_LIMIT_CMU
	CHANGE_LOCATIONS
	CHANGE_LOG_PRIORITY

	CHANGE_RESULTS
	CLEAR_ANALYST
	CREATE_TPL_FILE
	CUSTOMER
	DELETE_STUDY
	DELETE_TEMPLATES
	DEVELOP_LIMS
	EDIT_ATTACHMENTS
	EDIT_ATTRIBUTES
	EDIT_INSTANCE
	EDIT_SPECIFICATIONS
	EDIT_WORKLIST
	ENTER_RESULTS
	GENERATE_WORKLIST
	INSTALL_REPORTS
	LIMS_DBA
	LIMS_PUBLIC
	LOG_SAMPLES
	MAKE_REPORTS
	MANAGE_LAB
	OPERATING_SYSTEM
	ORACLE_TOOLS
	OVERRIDE_LIMIT
	OWN_UTILITY_VIEWS
	RUN_REPORTS
	SET_ANALYST
	TURBOCHROM_SEQUENCE
	VIEW_LAB_DATA
	VIEW_LOCATIONS
	VIEW_SPECIFICATIONS
	WAJ_RESULTS

VIEWING	LIMS_PUBLIC
	VIEW_LAB_DATA
	WAJ_RESULTS
VIEWING & ENTRY	ENTER_RESULTS
	LIMS_PUBLIC
	VIEW_LAB_DATA
	WAJ_RESULTS

Appendix –C-

Project Account codes for all projects collecting samples and entered to the LIMS system

SOURCE	Gov.	DEPT	SECTION	
W	AM	L	Q	Laboratories & quality Dept / Quality
W	AM	L	E	Laboratories & quality Dept / Environment
W	AM	L	I	Laboratories & quality Dept / Isotop
M	AM	P	S	Water Resource & Planning Directorate / Surfes Water
M	AM	P	G	Water Resource & Planning Directorate / Ground Water
W	AM	C	P	Well Licencing Unit / privet Well Licencing Section
W	AM	D	M	Drilling Directorate
P	O	O	O	Privet Sample
L	AM	A	O	Lema Company
W	MF	A	O	Mafraq water Administration
W	IR	A	O	Irbid water Administration
W	ZA	A	O	Zarqa water Administration
W	MN	A	O	Ma'an water Administration
W	MA	A	O	Madaba water Administration
W	AJ	A	O	Ajloun water Administration
W	JA	A	O	Jarash water Administration
W	TA	A	O	Tafeileh water Administration
W	KA	A	O	Karak water Administration
W	AQ	A	O	Aqaba water Administration
W	BA	A	O	Balqa water Administration

Annex –D-
List of Springs with no Identification numbers in the ministry

Lab Location code	Name	
SMSJUTHA	Al-Jutha Well No.5	
SISHAR2A	Harema Well No.2A	
SQSGUS2N	W. Al-Ghussan New Well No.2	
SISWMAJR	Wadi Al-Majar Well	
SISZIGMN	Abu Zieghan Spring(Men)	
SISZIGWM	Abu Zieghan Spring(Women)	
SGSRWDA	Rawda Well/Na'ur.	
SKSISMAL	Um Isma'el /Jouza/Karak	
SMSABUZN	Abu Zabaneh /W. Araba	
SMSRAHMH	Rahmeh Spring/Rahmeh	
SMSHORAN	Beer Al-Horani / Ma'an	
SMSHAJFH	Al-Hajfeh Spring /Qwara	
SMSJUTH3	Jutha Well No.3	
SBSHODAK	Kafir Hoda (Kaber)	
SBSHODAS	Kafeir Hoda (Sageir)	
SISHARM2	Harema Well No.2	
SKSNMREH	Sail Anemreh	
SBSGHAFL	Ghafel /Swama /Salit	
SISMADRS	Al-Madaris /Sakib /Jarash	
SMSJAHSH	Al-Jahsheya spring/W.Musa	
SISSLALH	Wadeh Shalaleh Spring-Jarash	
SMSMDLJH	Amdaljeh /Dalagha/Ma'an	
STSBURAQ	Al-Boraq Spring /Wadi Mousa	
LOC_CODE	LOC_NAME	IDN
SMSZADAN	Al-Zadan Spring	
SMSSADON	Sadoun Spring	
SKSUMAMD	Um Amoud / Hassa / Karak	
SISUMGDH	Um Ghadah/Mashar'/Gour Shamale	
SISALRAN	Khalit Al-Rayan /Malka/Irbid	
SISALGNM	Um Al-Ghanam /Ibdir /Irbid	
SISSUFST	Sufsafa Tehta/Sakib/Jarash	
SGSERAQ	Eraq Al-Ameer Spring /W.Sir	
SMSSAD20	Qa' Asaidyin Well No.20/Resha	
SGSNEMRA	Al-Minimra/Wadi Zarqa/Ma'en	
SMSHAWNH	Um Hawaneh Spring/Qwara	
STSJESER	Al-Jeser Spring	
SZSKHSHB	Khshebeh Spring	
SGSMYUSF	Mohamad Yosif W. Seir /Amman	
SKSMANCO	Ma'en Combined Water	
SZSSAHAR	Sahara Spring .	AL0562
SMSEUONM	Eoun Mosa Spring /W. Mosa	DG0540
SISTYBA	Tayba Spring /Irbid	
SGSYDODH	Al-Yadodeh Well /Al-Yadodeh	
SISSARAB	Al-Sarab Spring	
SMSJLWKW	Jilwakh Wista /W. Musa/Ma'an	
SMSMEDLJ	Emdaljeh /Dalagha / Ma'an	
Lab Location code	Name	
SISKARIM	WADI EL KARM-KFIR / IRBED	
SGSMENZR	ZARA' / MA'EN	
SBSNUHR	Enhair Spring / Safot	NO COUD
SGSSHAM1	Al-Shami Spring No.1/ Swaleih	WELL
SGSSHAM2	Al-Shami Spring No.2/ Swaleih	

SISMARS'	Marsa' Spring
SGSAYASH	Ayash Al-Karmawi Well
SGSMT'EB	Met'eb Za'al Al-Kne'an Well
SISENJEL	Enjeleh Spring/Al-Slimy
SGSMENSH	SHAMALI – MA'EN (AMMAN)
SASGHRM	Al-Gharam / Swaleih / Amman
ZASFISH1	Fish Farm Azraq –Pond 1
ZASFISH2	Fish Farm Azraq –Pond 2
SKSKHARB	Muhamad Kharuba/Khanzera/Karak
SMSUMBTH	Um Batha / Ma'an / W. Mosa
SMSALAQ	Abu Alaq / Ma'an
SISHEDAD	Al-Haddad / Jarash / Rajib
SMSSWALM	Swalim Al-Nawaflah / Ma'an
SMSBAYRA	Al-Bayara Spring / Ma'an
STSALDIR	Al-Deir Spring / Sanfaha
SISATEBA	Ateba Spring /Malka
SMSAMIR	Amir Spring / Rajif-Ma'an
SBSALJAM	EL-JAME' SPRING / SALT
ZASSOURC	Source Water Spring
SGSMENSL	SEIL MA'EN / MA'EN
SBSBALAD	Al-Balad Spring / Salt
SGSNASRH	NASSARA / MA'EN
SKSYAHOD	HAMMAM EL-YADOUD / SAFI/KARAK
SMSBALAD	Al-Balad / Dalagha / Ma'an
AASRDAB2	Dabouk Reservoir Outlet
SKSBTHYN	BUTHAYNA-BAQEE' / KARAK
SGSBASSA	EL-BASSA / W.SIR /AMMAN
KKSSUKER	Om-SUKKER/KARAK
SKSZARA	EZ-ZARA / GHOR SAFI / KARAK
SISESDYH	KRAYMEH / IRBED
SGSMENJN	JANOUBI MA'EN
SBSKHNEZ	Khezra Spring
SMSBUQEE	EL-BOQAE' / W.MUSA / MA'AN

Annex -E-

Entry form for Identifying Locations of sites monitored for water Quality .

Ministry of Water and Irrigation- Water Authority Labs

Entry form for Identifying Locations of sites monitored for water Quality .

Site Name (in Arabic)	Site name in English	Gov (IDN)	Village or town name (Arabic)	Village or town name (English)	Village Code	PGE(X)	PGN(Y)	Location code (Sample Plan)	Collector	Date

Governorate initials :

AM: Amman	BA: Balaqa	IR: Irbid	TA: Tafeileh	MN: Maan	MF: Mafraq
ZA: Zarqa	AQ: Aqaba	Ka: Karak	AJ: Ajloun	JA: Jerash	MA: Madaba

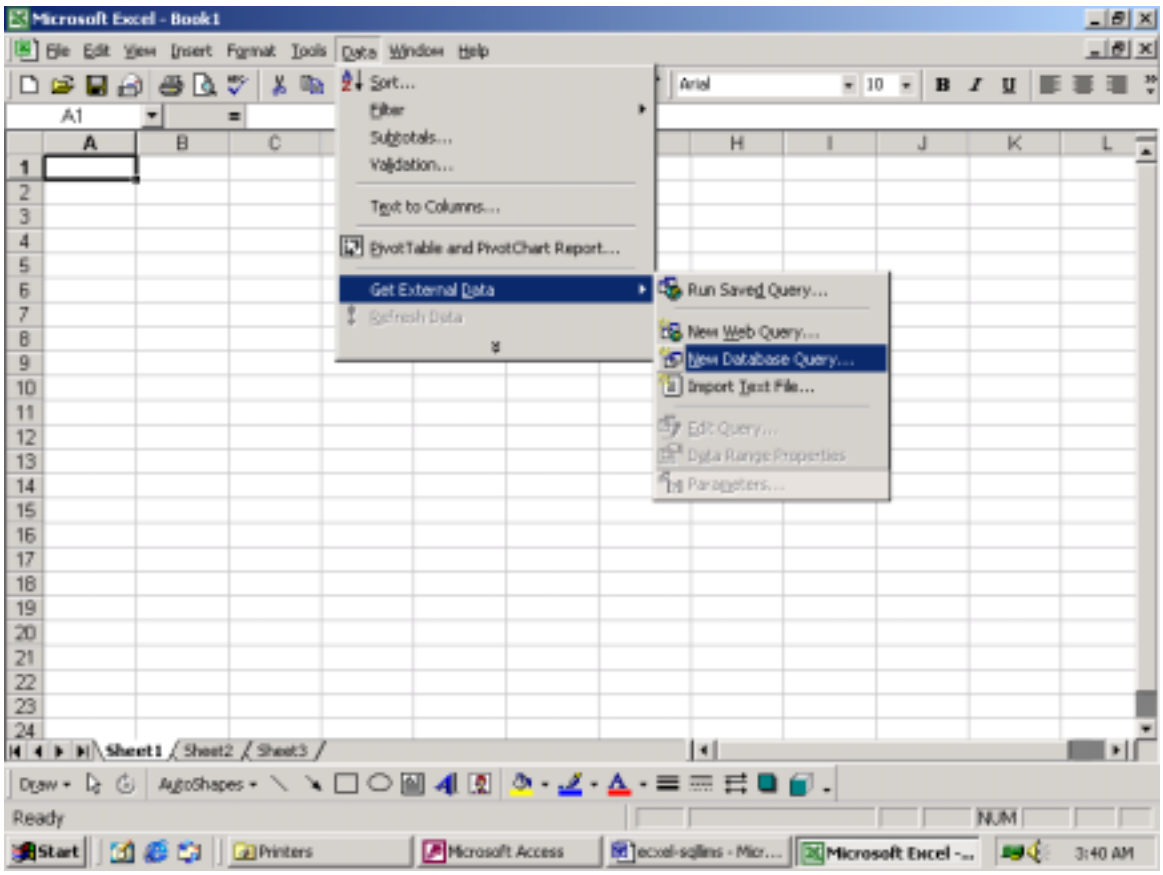
* English names and Location code should not be filled in the field

Annex –F-

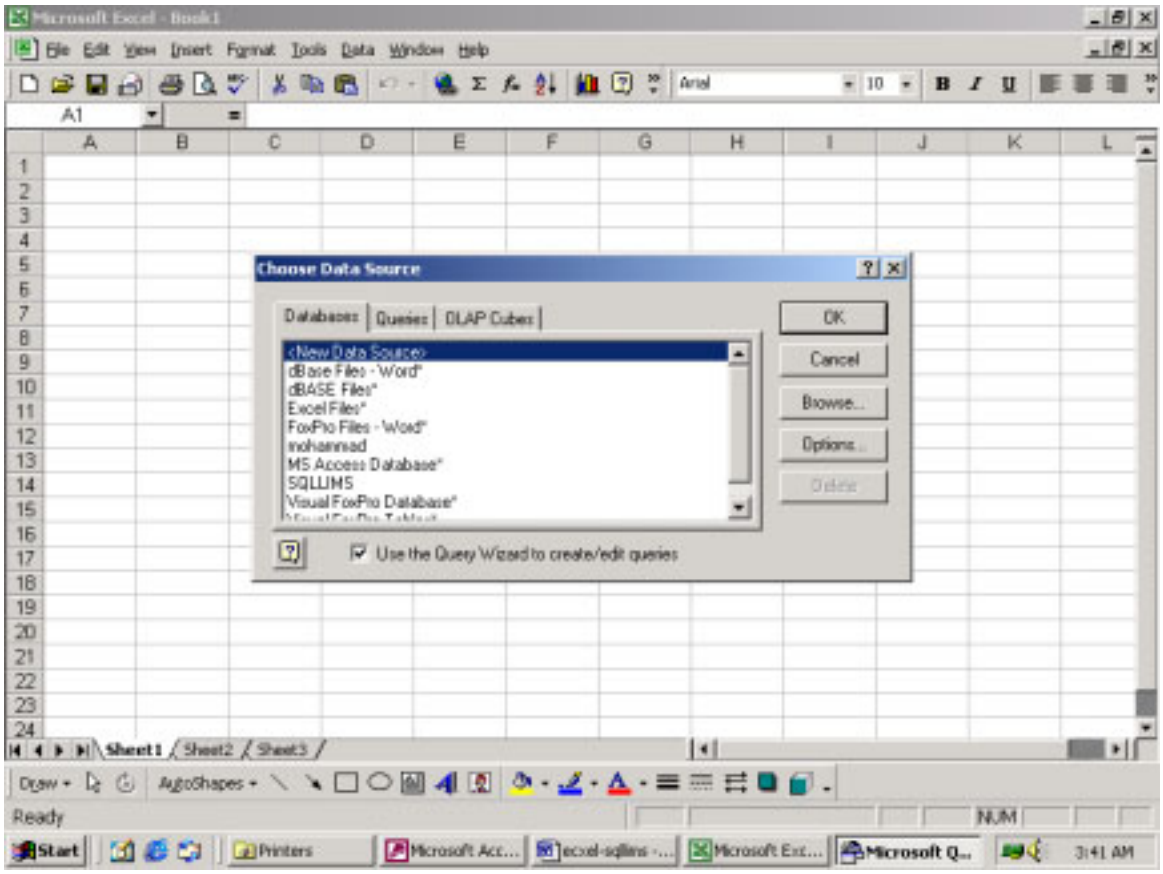
Configuration procedure for the ODBC link between the EXCEL and SQL*LIMS

1- How to create an ODBC link between the EXCEL and the SQLLIMS software:

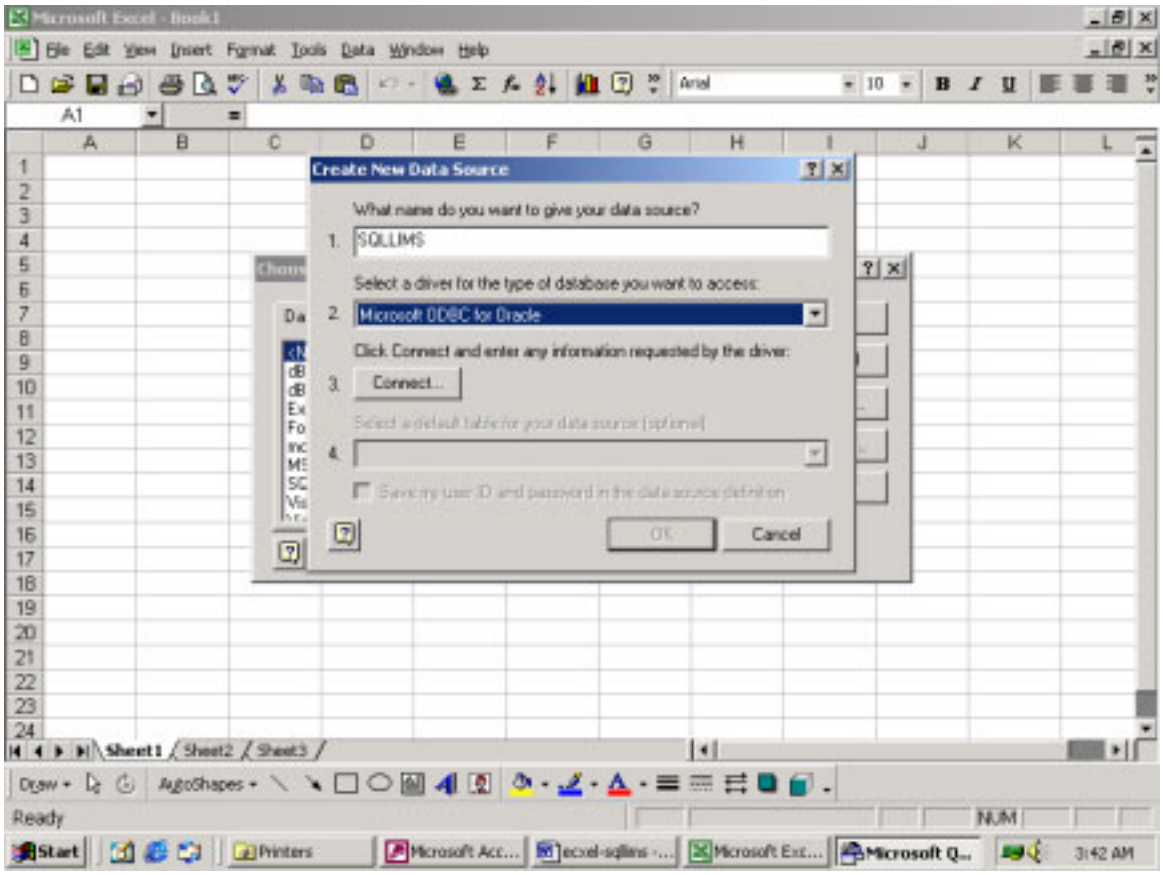
1- From EXCEL
2- Choose data



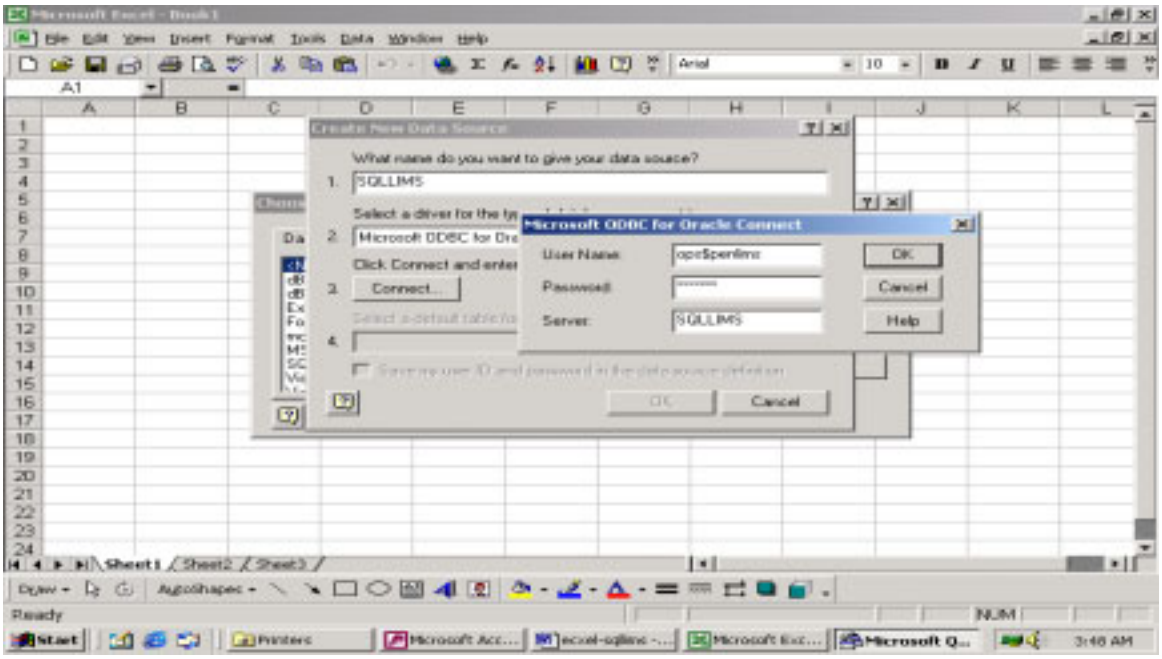
3- choose Get External data
4- Choose new database Query
5- Now create a new data source



6- Now define the new data source as SQLLIMS as follows:



7- Now connect and fill the following data:



8- By this the connection from EXCEL to the SQLLIMS database file is established.

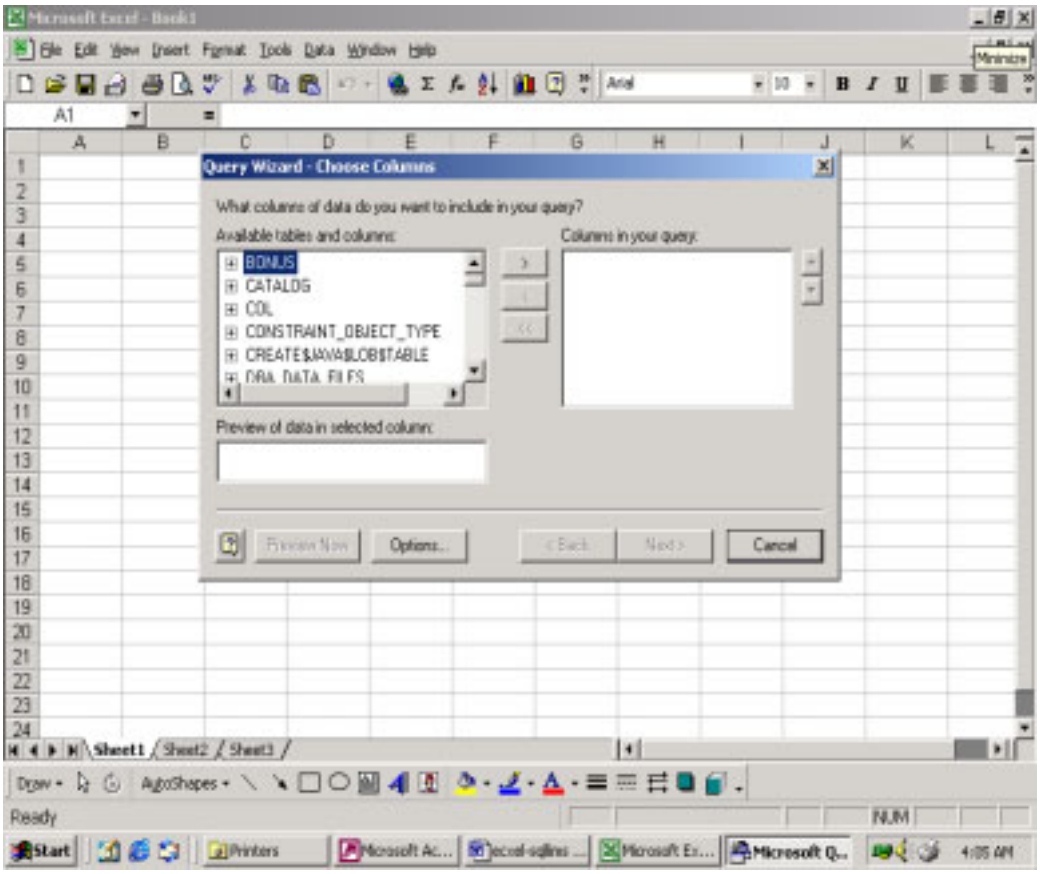
2- How to get data from SQLLIMS using the ODBC link created previously.

When the user wants to get data from SQLLIMS database files, he/she goes to EXCEL and chooses :

Data
Get external data
New database query
SQLLIMS

Now fill your user name, password and server name (SQLLIMS)

Choose the table that contains the data required and get it under EXCEL from the list provided , a sample of the tables is shown below:



and follow the directions to export it to EXCEL